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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/555,721	04/02/2007	Christopher L. Bohler	GLOZ 200154US02	9930
74495 7590 10/27/2011 FAY SHARPE LLP/GE LIGHTING SOLUTIONS, LLC 1228 Euclid Avenue, 5th Floor The Halle Building Cleveland, OH 44115-1843				
EXAMINER				
ZETTL, MARY E				
ART UNIT		PAPER NUMBER		
2875				
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10/27/2011		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/555,721

Applicant(s)

BOHLER ET AL.

Examiner

MARY ZETTL

Art Unit

2875

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 7/25/2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1,3,5,7,11-18,20,21 and 23-30 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1,3,5,7,11-18,20,21 and 23-30 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☒ The drawing(s) filed on 07 November 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date 7/25/11
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Some of the arguments presented have been found to be convincing and therefore this new non-final office action is being submitted.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the two different lighting modules claimed in claim 23 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,3, 5, 7, 11, 13, 14, 20, 21, and 26-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haitz (US 5,758,951 A) in view of Cao (US 2003/0039122 A1).

Regarding claim 1, Haitz discloses a light source comprising: a light engine for generating light of one of a plurality of wavelengths, the light engine including: a platform (27), and at least one LED (21-26, Fig. 3) disposed on the platform (Fig. 3); an enclosure (not specifically labeled, but shown between 27 and 45 on the left and right sides) surrounding a light generating area of the light engine (Fig. 3); a base (28 and 30, Fig. 3); a luminescent converting element (45, it is a luminescent element that converts input light to output light, light exits/is converted to a somewhat different form due to refraction) to receive a light generated by the light engine and convert at least a portion of the received light into visible light (visible input light to visible output light), said

luminescent converting element being one of disposed on the enclosure (disposed on the enclosure, Fig. 3) and dispersed within the material forming the enclosure or both; and a conversion circuit for supplying electric power to the light engine (controller, 35, Fig. 2).

Haitz does not disclose expressly a heat sink.

Cao teaches an LED device comprising a base (105) including a heat sink (104; par. 39) for conducting thermal energy away from the at least one LED (Fig. 1). Cao also teaches a luminescent converting element (par. 35) disposed one of on the enclosure and dispersed within the material forming the enclosure.

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the invention of Haitz such that a heat sink was included for the purpose of preventing a shortened lifespan of the device due to prolonged exposure to heat.

Regarding claim 3, Haitz teaches a light guide (40, Fig. 3) disposed within the enclosure (Fig. 3).

Regarding claim 5, Haitz teaches the light guide (40) provides an appearance of a filament (like a filament in that the jagged section appears to be like a filament).

Regarding claim 7, Haitz teaches the light guide comprises a reflector (bottom surface of 40 that will reflect light through refraction).

Regarding claim 11, Haitz does not disclose expressly the luminescent converting element comprises a phosphor.

Cao teaches the luminescent converting element comprising a phosphor (par. 35).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the invention of Haitz et al. by using a phosphor in the luminescent converting element as taught by Cao for the purpose of producing light with desirable light output qualities (such as creating white light through the combination of selected LEDs and phosphors).

Regarding claim 13, Haitz teaches one of an index matching material and a lensing material encompassing the at least one LED (45, lensing material, col. 5, lines 55-63).

Regarding claim 14, Haitz teaches the base (28) is adapted for mating with the light engine (all components are mated together).

Regarding claim 20, Haitz and Lee et al. does not disclose expressly the enclosure comprises a substantially elliptical shape. It would have been obvious to one

of ordinary skill in the art at the time the invention was made to the enclosure a substantially elliptical shape, since it has been held that a mere change in shape of an element is generally recognized as being within the level of ordinary skill in the art when the change in shape is not significant to the function of the combination. Further, one would have been motivated to select the shape of an ellipse for the purpose of casting light in the desired manner. See *In re Dailey*, 357 F. 2d 669, 149 USPQ 47 (CCPA 1966).

Regarding claim 21, Haitz does not disclose expressly the enclosure comprising a substantially spherical shape.

Cao et al. teaches an enclosure (101b) comprising a substantially spherical shape (Fig. 1).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the invention of Haitz such that the enclosure was substantially spherical for the purpose of being able to cast output light in the desired shape.

Regarding claims 26 and 27, Haitz does not teach an active cooling device.

Cao teaches an active cooling device (407, Figure 6) being an electric fan (col. 7, lines 30-40).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the invention of Haitz by including a fan as

taught by Cao for the purpose of preventing device overheating, which could cause device failure or a shortened lifespan for the device.

Regarding claim 28, Haitz does not disclose expressly the platform comprising a printed circuit board or a heat sink.

Cao et al. teaches a platform comprising a printed circuit board or a heat sink (104, Fig. 1).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the invention of Haitz by including a heat sink as taught by Cao et al. for the purpose of preventing overheating and subsequently a shortened lifespan for the device.

Regarding claim 29, Haitz teaches the base is a screw or wedge base (28).

Regarding claim 30, Haitz teaches the light engine is positioned at a peripheral of the enclosure (Fig. 3).

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haitz (US 5,758,951 A) in view of Cao (US 2003/0039122 A1) in view of Taskarel al. (US 6,734,465 B1).

Regarding claim 12, Haitz et al. and Cao do not disclose expressly the phosphor comprising one of: an organic phosphor, an organic complex of a rare earth metal, a nanophosphor, and a quantum dot phosphor.

Taskarel et al. teaches a lighting device including a luminescent converting element comprising one of an organic phosphor, an organic complex of a rare earth metal, a nanophosphor, and a quantum dot phosphor (col. 3, lines 44-60).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the invention of Haitz et al. and Lee et al. by using a phosphor in the luminescent converting element as taught by Taskarel et al. for the purpose of producing light with a high color rendering index and with desirable light output qualities (such as creating white light through the combination of selected LEDs and phosphors).

Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haitz (US 5,758,951 A) in view of Cao (US 2003/0039122 A1) in view of Pederson (US 2002/0041499 A1).

Regarding claim 15, Haitz does not disclose expressly a heat sink. Cao teaches the heat sink comprises: a heat sink (104) inserted into the base (20) for conducting the thermal energy from the at least one LED (60) to at least one of the base and ambient air (par. 21).

Haitz and Cao do not disclose expressly the use of a slug.

Pederson teaches a lighting device using a slug (342, Fig. 48 and 49; par. 255).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the invention of Haitz and Cao such that the heat sinking means included a slug as taught by Pederson since various means for removing heat are well known and since one of ordinary skill in the art would have found it obvious to have selected a well known method (use of a slug) for removing heat so as to prevent over heating of the device and premature failure of the device.

Regarding claim 16, Haitz and Cao do not disclose expressly the slug comprises: a plurality of fins disposed about an outer periphery.

Pederson teaches a slug (342, Fig. 48 and 49) and also teaches the use of fins (Fig. 38 and 39).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art have modified the invention of Haitz et al. and Cao et al. by combining the teaches of Pederson of using both a slug and using fins in order to maximize heat dissipation.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haitz (US 5,758,951 A) in view of Cao (US 2003/0039122 A1) and further in view of Bohler et al. (US 2002/0176250 A1).

Regarding claim 17, Haitz et al. and Cao et al. do not disclose expressly the heat sink extending radially from the base to conduct the thermal energy to ambient air.

Gloiseten teaches the heat sink extending radially from the base to conduct thermal energy to the air (Fig. 3).

Bohler teaches the use of a radial heat sink (Fig. 4 and 5).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art have modified the invention of Haitz et al. and Cao et al. by having the heat sink extend radially from the base to conduct thermal energy to the air as taught by Bohler et al. for the purpose of increasing heat dissipation.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haitz (US 5,758,951 A) in view of Cao (US 2003/0039122 A1) and further in view of and Tseng et al. (US 2004/0105262 A1).

Regarding claim 18, Haitz et al. and Cao et al. do not disclose expressly the conversion circuit comprising an AC to DC converter.

Tseng et al. teaches a light engine for generating light of one of a plurality of wavelengths, the light engine including: a platform, and at least one LED (20), an enclosure, and a light guide (253) within the enclosure, and a AC to DC converter (paragraph 17).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the invention of Haitz et al. and Cao et al. such that an AC to DC converter was provided as taught by Tseng such that the LEDs which are DC based could be powered by a traditional AC power supply.

Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haitz (US 5,758,951 A) in view of Cao (US 2003/0039122 A1) and further in view of Chapman et al. (US 5,685,637 A).

Regarding claim 23, Haitz discloses a light source comprising: a light engine for generating light of one of a plurality of wavelengths, the light engine including: a platform (27), and at least one LED (21-26, Fig. 3) disposed on the platform (Fig. 3); an enclosure (not specifically labeled, but shown between 27 and 45 on the left and right sides) surrounding a light generating area of the light engine (Fig. 3); a base (28 and 30, Fig. 3); a luminescent converting element (45, it is a luminescent element that converts input light to output light, light exits/is converted to a somewhat different form due to refraction) to receive a light generated by the light engine and convert at least a portion of the received light into visible light (visible input light to visible output light), said luminescent converting element being one of disposed on the enclosure (disposed on the enclosure, Fig. 3) and dispersed within the material forming the enclosure or both; and a conversion circuit for supplying electric power to the light engine (controller, 35, Fig. 2); an index matching material encompassing the at least one LED (the index matching material being air); and the base (28) is adapted for mating with the light engine (all components are mated together); and a power module for energizing the at least one LED (as required for the lighting device to function).

Haitz does not disclose expressly a heat sink.

Cao teaches an LED device comprising a base (105) including a heat sink (104; par. 39) for conducting thermal energy away from the at least one LED (Fig. 1). Cao

also teaches a luminescent converting element (par. 35) disposed one of on the enclosure and dispersed within the material forming the enclosure.

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the invention of Haitz such that a heat sink was included for the purpose of preventing a shortened lifespan of the device due to prolonged exposure to heat.

Haitz and Cao do not disclose expressly the use of at least two light emitting modules having different light emission characteristics.

Chapman teaches a lighting device wherein at least two light emitting devices have different light emission characteristics (col. 4, lines 19-34).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to have modified the invention of Haitz and Cao such that at least two of the light emitting devices have different light emission characteristics as taught by Chapman for the purpose of providing the desired light output effect.

Regarding claim 24, Haitz teaches the base module is one of a screw or wedge base (28).

Response to Arguments

On page 7, the applicant has argued against the examiners interpretation of luminescent converting element and has stated that luminescent converting elements are well known in the art as including, for example, phosphors. However, the applicant has failed to provide their own definition of luminescent converting element and therefore the broadest interpretation must be applied. The examiner maintains that in passing through item 42, light will undergo some changes, either in refraction, reduction in brightness, etc, and therefore may be considered to be a luminescent converting element. Furthermore Cao (US 2003/0039122) also teaches a luminescent converting material.

On page 8, the applicant has argued that the specification notes that the "index matching material is one of silicones, acrylics, epoxies, thermoplastics, glasses and other appropriate materials. " It is unclear whether the applicant considers any material that falls into the category to be an "index matching material."

On page 9, the applicant has argued that the light guide of Haitz does not look like a filament. The examiner disagrees and notes that "an appearance of a filament" is broad and that filaments are generally located near the center of a light build and are elongate in form. Therefore the examiner maintains that the light guide of Haitz has the appearance of a filament. In addition the examiner notes Natsume (US 2002/0030998) Figure 6 as teaching a filament 12a of which the light guide of Haitz appears similar.

On page 10, the applicant has argued that "light cannot be reflected by refraction." According to Merriam Webster's 10th Edition Collegiate Dictionary, reflect is

defined as: to throw back light or sound. The light guide of Haitz will at least "throw back" a portion of the light that hits it due to refraction.

On page 10, the applicant has argued that item 45 of Haitz does not encompass the LEDs. The examiner disagrees and maintains that item 45 (together with the side wall) encompass the LEDs.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary Zettl whose telephone number is 571-272-6007. The examiner can normally be reached on M-F 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on (571) 272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MZ
/Mary Zettl/
Examiner, Art Unit 2875